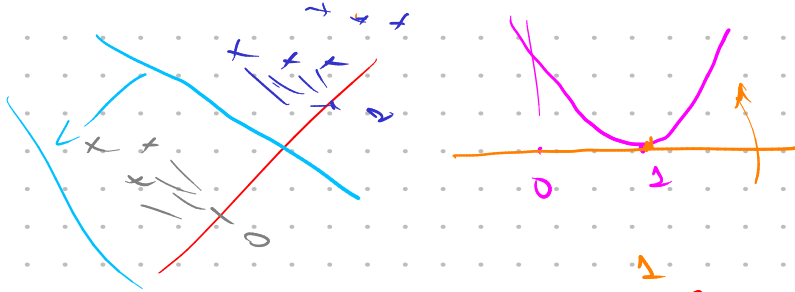


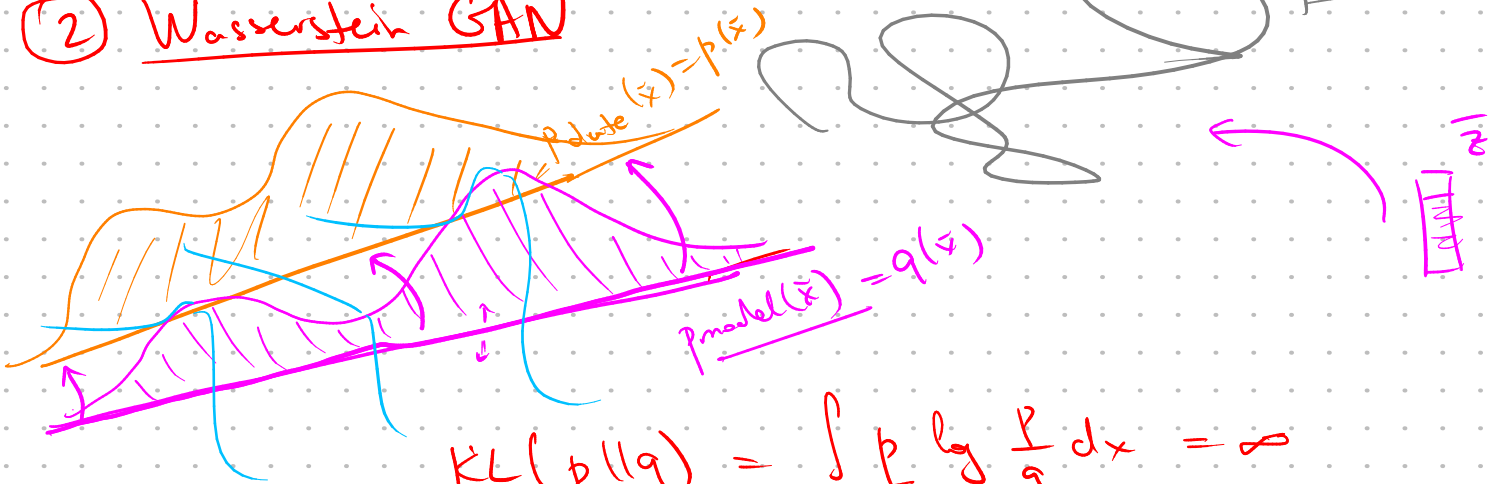
① LSGAN



$$L_D^{LSGAN} = E_{\bar{x} \sim p_{data}} [(D(\bar{x}) - b)^2] + E_{\bar{z} \sim p_z} [(D(G(\bar{z})) - a)^2]$$

$$L_G^{LSGAN} = E_{\bar{z} \sim p_z} [(D(G(\bar{z})) - c)^2]$$

② Wasserstein GAN

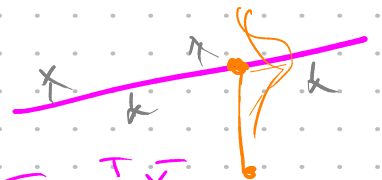


$$KL(p \parallel q) = \int p \log \frac{p}{q} dx = \infty$$

$$KL(q \parallel p) = \int q \log \frac{q}{p} dx = \infty$$

$$JSD(p \parallel q) = KL(p \parallel \frac{p+q}{2}) + KL(q \parallel \frac{p+q}{2}) = \log 2$$

$$\hat{y} \sim \mathcal{N}(\hat{y} \mid \bar{w}^T \bar{x}, \sigma^2)$$

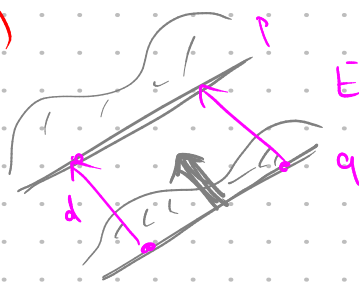
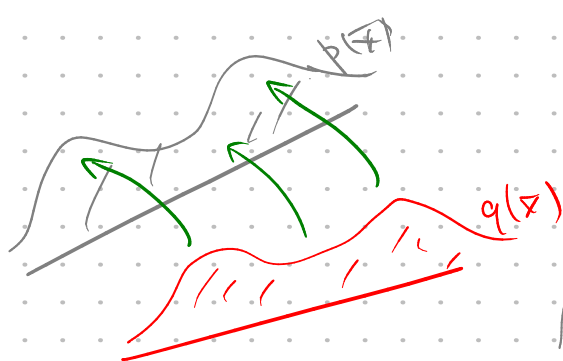


$$y(\bar{x}) = \bar{w}_{MAP}^T \bar{x}$$

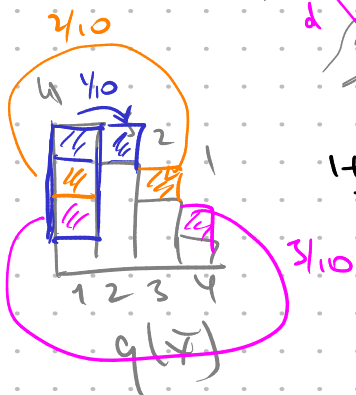
$$\bar{z} \rightarrow \boxed{G} \rightarrow \bar{x} \sim p_{model}(\bar{x})$$

Wasserstein distance

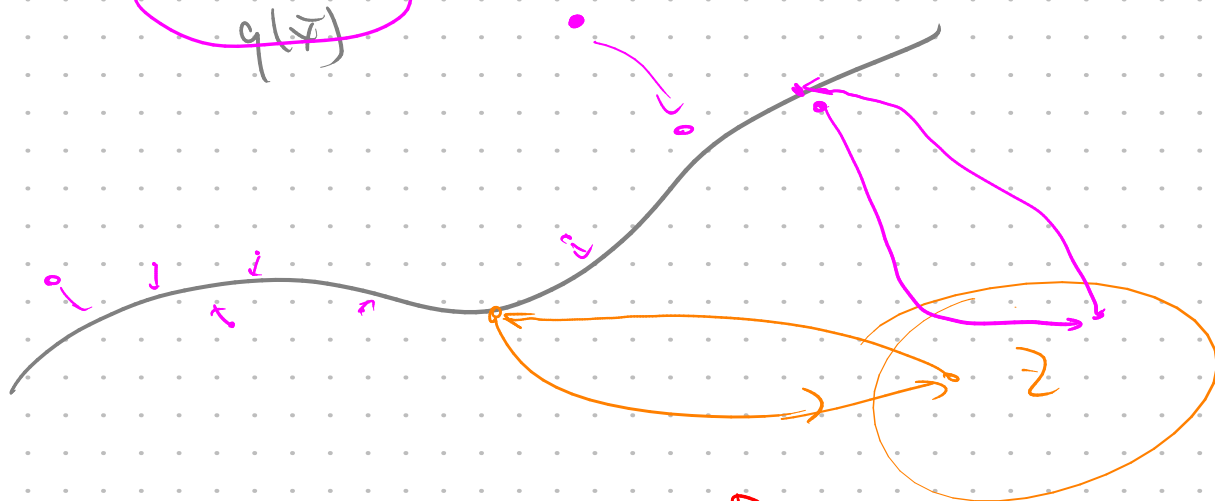
Earth Mover distance (EMD)



$$EMD(p, q) = d$$

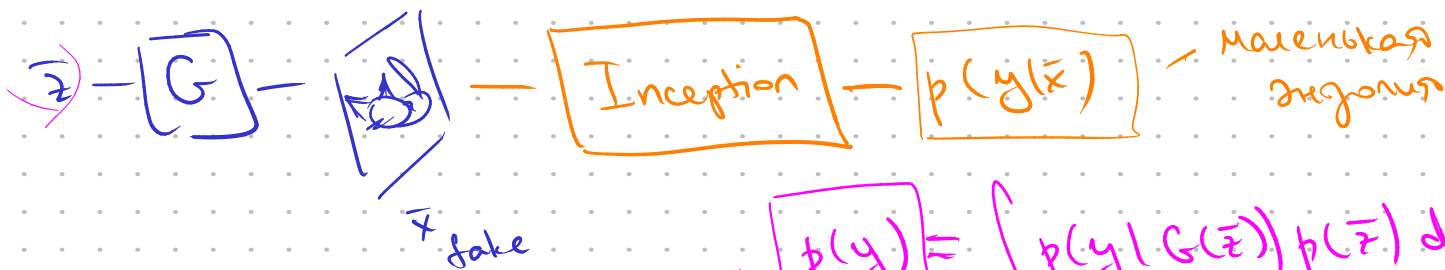


$$\frac{1+2+3}{10} = \frac{6}{10}$$



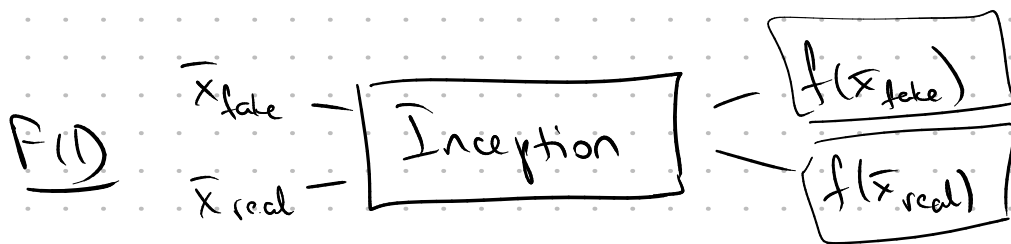
Inception score

FID
Fréchet Inception Distance



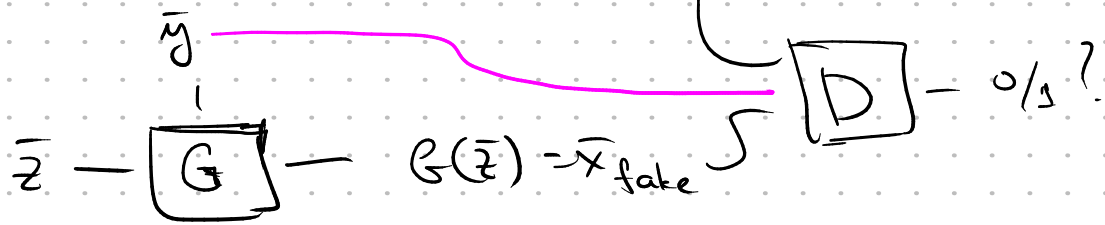
$$Inc. Score = E_x [KL(p(y) || p(y|x))] \quad \text{Bolshaya zergonura}$$

$$p(y) = \int p(y | G(\bar{z})) p(\bar{z}) d\bar{z}$$



Conditional GAN

$$D = \left\{ (\bar{x}_{\text{real}}, \bar{y}_{\text{real}}) \right\}$$



Adversarial autoencoder (AAE)

